CLAIMS

What is claimed is:

1. A method of forming a conductive metal layer on a non-conductive surface, comprising:

providing a non-conductive surface;

contacting the non-conductive surface with an aqueous solution or mixture containing a stannous salt to form a sensitized surface;

contacting the sensitized surface with an aqueous solution or mixture containing a silver salt having a pH in the range from about 5 to about 10 to form a catalyzed surface; and

electroless plating the catalyzed surface by applying an electroless plating solution to the catalyzed surface.

2. The method of claim 1, further comprising a step of modifying the surface prior to contacting the surface with the aqueous solution or mixture of a stannous salt.

3. The method of claim 2, wherein the step of modifying comprises applying an etchant or a solvent to the surface.

4. The method of claim 1, further comprising applying a conditioner to the non-conductive surface.

5. The method of claim 4, wherein the conditioner comprises a surfactant.

6. The method of claim 5, wherein the surfactant comprises an acidic solution of at least one of nonionic, amphoteric and cationic surfactants.

7. The method of claim 5, wherein the conditioner further comprises a reducing agent

8. The method of claim 7, wherein the reducing agent is in the form of an acid salt.

9. The method of claim 5, wherein the conditioner further comprises a complexing agent.

10. The method of claim 1, wherein the stannous salt is one or more of $SnSO_4$, $SnCl_2$, SnF_2, $Sn(HBF_4)_2$ and $Sn(CH_3SO_3)_2$.

11. The method of claim 1, wherein the stannous salt is $SnCl_2$.

12. The method of claim 1, wherein the stannous salt has a concentration in the range from about 0.1 to about 250 g/l.

13. The method of claim 1, wherein the silver salt is one or more of $AgNO_3$, Ag_2SO_4, $AgCH_3SO_3$, silver-ammonia complex, silver-amine complex and silver-chloride complex.

14. The method of claim 1, wherein the aqueous solution or mixture containing a silver salt is at a pH in the range from about 6 to about 9.

15. The method of claim 1, wherein the silver salt has a concentration in the range from about 0.01 g/l to about 500 g/l.

16. The method of claim 1, wherein the electroless plating solution is free of formaldehyde.

17. The method of claim 1, wherein the electroless plating solution comprises at least one electroless platable metal selected from silver, copper, nickel, indium, palladium, platinum, gold, ruthenium and cobalt.

18. The method of claim 1, wherein the electroless platable metal is at least one of copper and nickel.

19. The method of claim 1, wherein the non-conductive surface comprises at least one selected from ABS, ABS/PC, polyamide (PA), polypropylene (PP), thermoplastic olefins (TPO's), polyphenyleneoxide (PPO), polyphenylene ether, polyimides, polyether imide (PEI), polyether ether ketone (PEEK), polyphenylene sulfide, polyphthalamides, polyurethanes (PU) and composites.

20. The method of claim 1, wherein the step of electroless plating is conducted at a pH of at least about 6.

21. A method of forming a conductive metal layer on a non-conductive surface, comprising:

providing a non-conductive surface;

applying a conditioner to the non-conductive surface to form a conditioned surface;

contacting the conditioned surface with an aqueous stannous salt to form a sensitized surface;

contacting the sensitized surface with an aqueous solution or mixture containing a silver salt at a pH in the range from about 6 to about 9 to form a catalyzed surface; and

electroless plating the catalyzed surface by applying an electroless plating solution to the catalyzed surface.

22. The method of claim 21, wherein the aqueous solution or mixture containing a silver salt is substantially free of palladium.

23. The method of claim 21, further comprising a step of modifying the non-conductive surface prior to the step of applying a conditioner.

24. The method of claim 21, wherein the step of electroless plating is conducted at a pH of at least about 6.